

# Treating Open and Closed Chest Wounds

## OBJECTIVES:

**-What is an Open Chest wound? How do we treat it?**

**-What is a Closed Chest wound? How do we treat it?**



# **Treating Open and Closed Chest Wounds (Cont'd)**

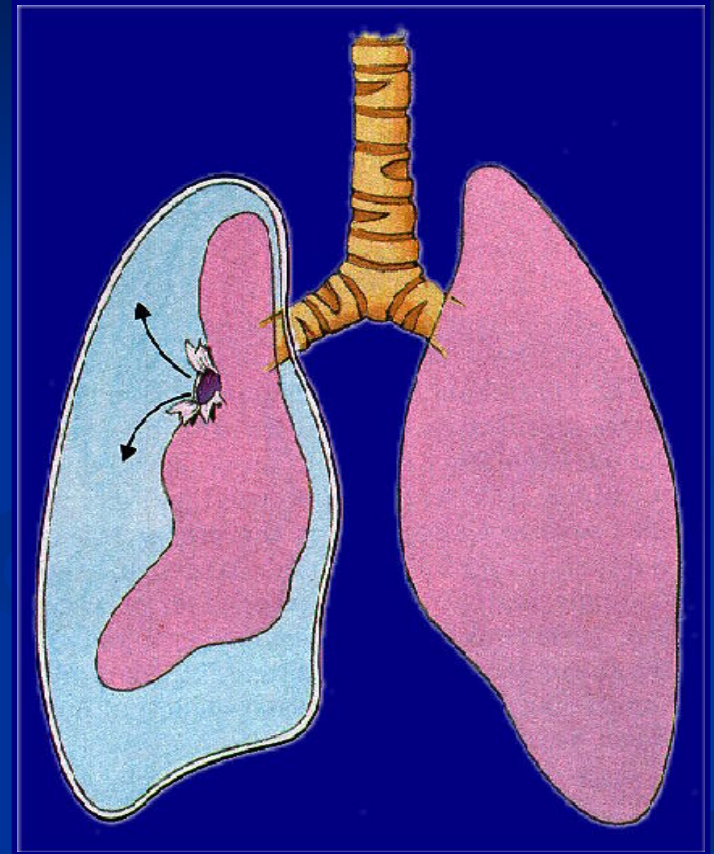
- **Signs and Symptoms of a Sucking Chest Wound**
  - **Sucking or Hissing sounds coming from the Chest wound**
  - **Casualty coughing up blood**
  - **Frothy blood coming from the wound site**
  - **Shortness of breath; Difficulty breathing**
  - **Chest not rising normally when casualty inhales**
  - **Pain in shoulder or anywhere that increases with breathing**
  - **Bluish tint of lips, inside mouth, fingertips or nail beds**
  - **Rapid and weak heartbeat**

# Treating Open and Closed Chest Wounds (Cont'd)

Air in between Lung  
“bag” and rib cage.

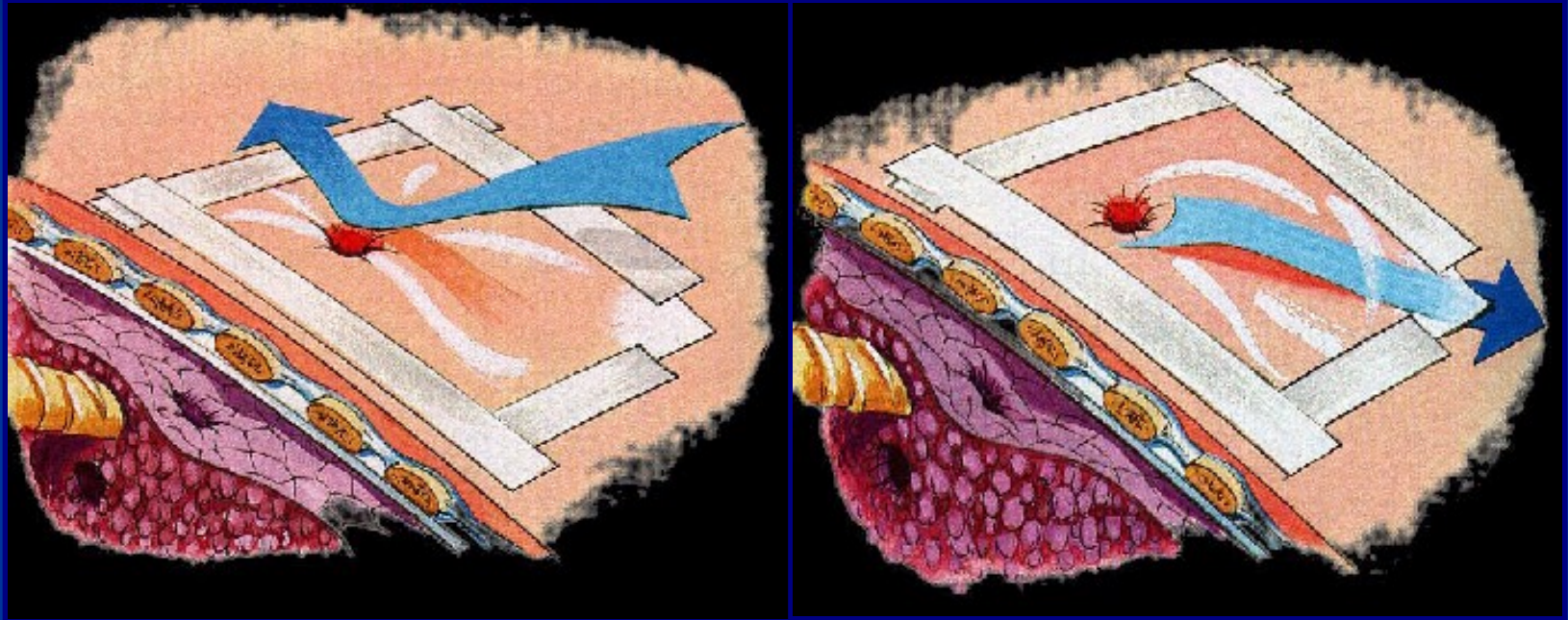
Decompression allows  
the escape of this air

Will not re-inflate  
lung, but will relieve  
tension and pressure  
in chest area.



# Treating Open and Closed Chest Wounds (Cont'd)

## Open Pneumothorax



# Treating Open and Closed Chest Wounds (Cont'd)

- **Management:**
  - **Ensure an open airway**
  - **Seal the wound. Both entrance and exit with an occlusive dressing, petrolatum gauze or Asherman Chest Seal® (LOOK FOR THE EXIT HOLE)**
  - **Real world: Place the casualty in their position of comfort. Test=injured side**
  - **Monitor respirations after an occlusive dressing is applied. Consider doing a NCD if respirations become labored.**

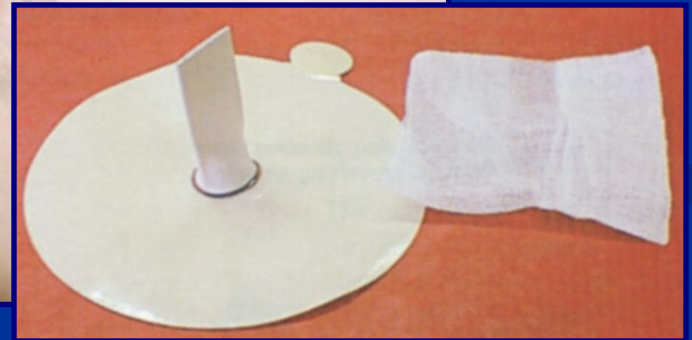


# Open Pneumothorax

- Petroleum Gauze can also be used to seal a sucking chest wound.



# "Asherman Chest Seal®"



# Treating Open and Closed Chest Wounds (Cont'd)





# Treating Open and Closed Chest Wounds (Cont'd)



# Treating Open and Closed Chest Wounds (Cont'd)

- For multiple injuries to the chest ( e.g. casualty exposed to shrapnel from a mortar or an IED), You can use Tegaderm ( **IV OP Sites**) to cover multiple areas.
- The Goal is to seal the Chest area immediately

# **Treating Open and Closed Chest Wounds (Cont'd)**

- **Demonstration of sealing an Open Chest Wound, and discussion of various materials that can be used in this process.**
- **Demonstrate how to create a “Flutter Valve” and the need for one.**
- **Demonstrate how to seal an Open Chest wound with an impaled Object**





# **Treating Open and Closed Chest Wounds (Cont'd)**

- **Closed Chest Wounds / Tension Pneumothorax**

- **Signs and Symptoms**

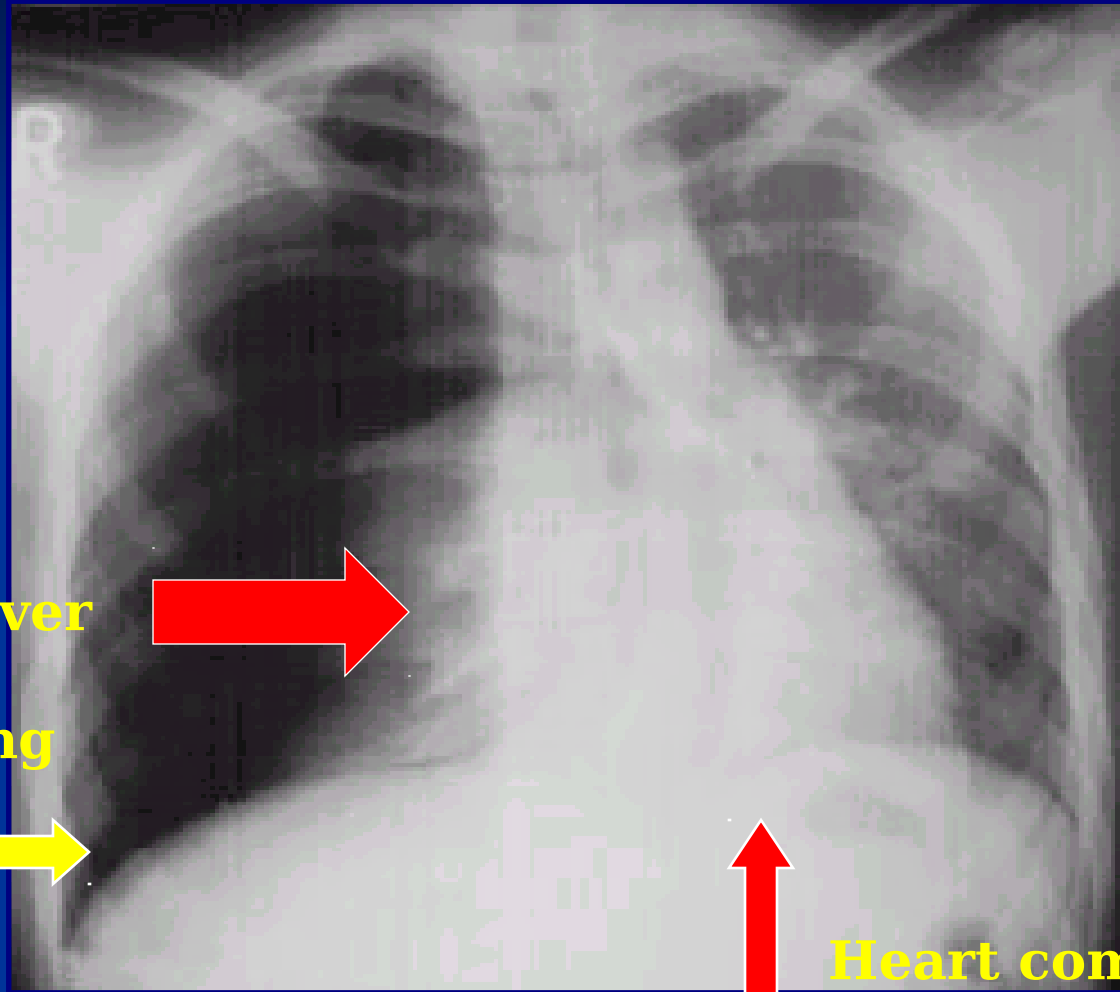
- **Anxiety, agitation, and apprehension**
- **Diminished or absent breath sounds**
- **Increasing difficulty in breathing with cyanosis (bluish tint around lips, nail beds, inside mouth)**
- **Rapid shallow breathing**
- **Abnormally Low Blood Pressure ( NO RADIAL PULSE IS PRESENT)**

# **Treating Open and Closed Chest Wounds (Cont'd)**

## **■ Signs and Symptoms of a Tension Pneumothorax (Cont'd)**

- Distended Neck veins**
- Cool clammy skin**
- Decreased Level of Consciousness**
- Visible deterioration of casualties condition**
- Tracheal deviation (Shifting of the windpipe to the left or right) [ A late sign, and probably will not be observed].**

# Treating Open and Closed Chest Wounds (Cont'd)



**Air pushes over  
heart and  
collapses lung**

**Air  
outside  
lung  
from  
wound**

**Heart compressed  
not able to pump  
well**

# **Treating Open and Closed Chest Wounds (Cont'd)**

- **Management:**

- **Ensure an open airway**
- **Decompress the affected side**

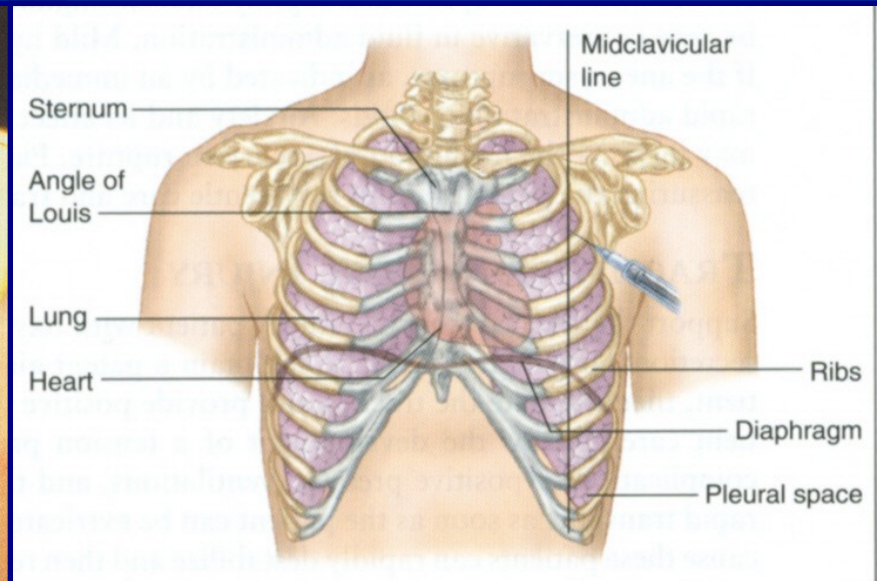
- **Indications:**

- **Any chest trauma with progressive respiratory distress.**

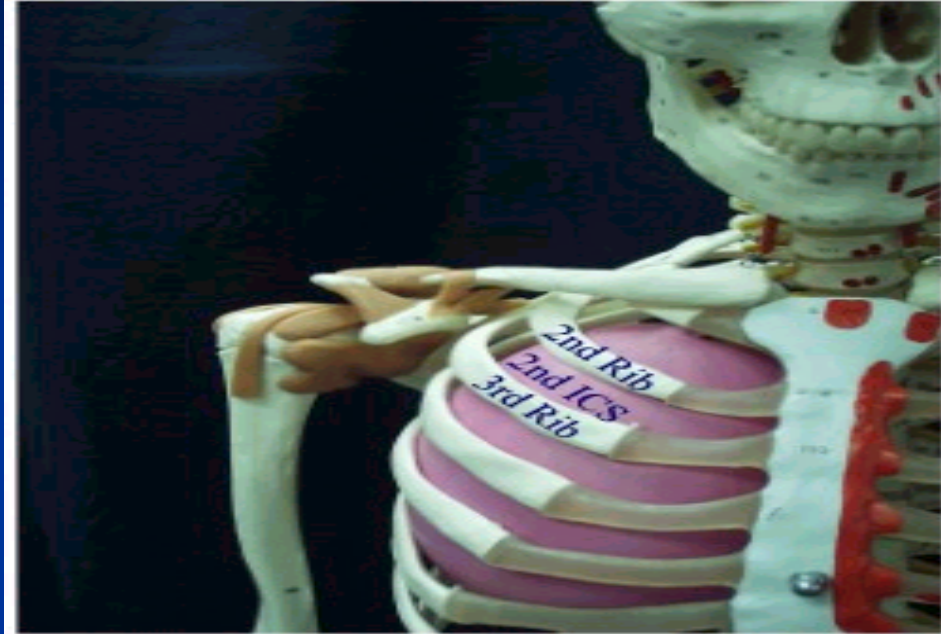
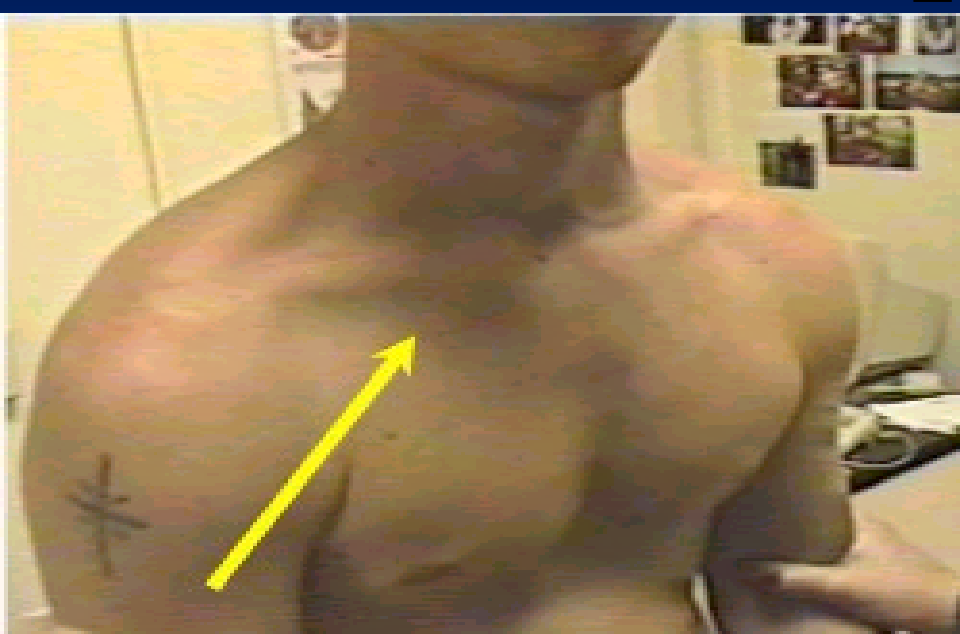


# Treating Open and Closed Chest Wounds (Cont'd)

- **Procedure:**
  - **Identify the second ICS on the anterior chest wall, MCL:**



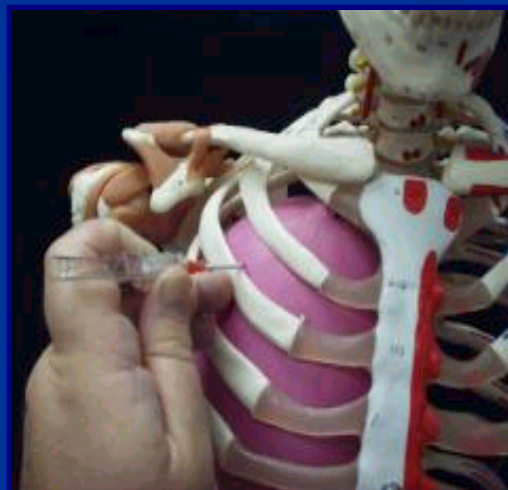
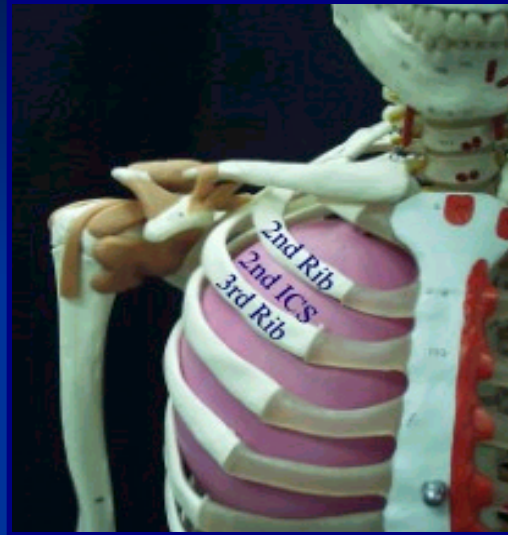
# Needle Chest Decompression



# **Treating Open and Closed Chest Wounds (Cont'd)**

- **Insert a 14 ga. Catheter at a 90° angle over the top of the 3<sup>rd</sup> rib, into the 2<sup>nd</sup> ICS at the MCL.**
- **Needle must be long enough to enter the chest cavity (3 1/4 - 3 1/2 inches). Per the Army Surgeon Generals guidance.**

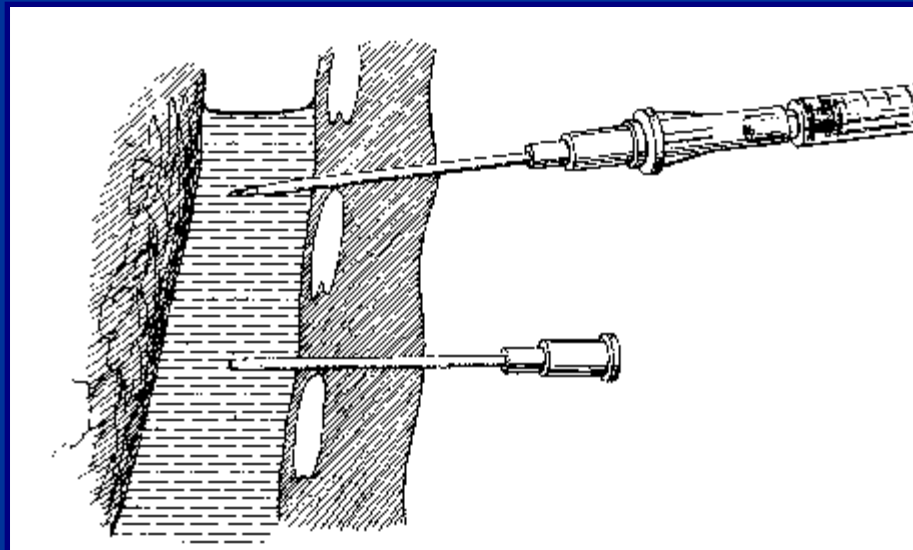
# Treating Open and Closed Chest Wounds (Cont'd)





# Treating Open and Closed Chest Wounds (Cont'd)

- If a tension pneumothorax is present, a “hiss of air” may be heard escaping from the chest cavity.
- Remove the needle, leave the catheter in place.



# Treating Open and Closed Chest Wounds (Cont'd)

- Tape the catheter hub to the chest wall.
- The casualty's condition should rapidly improve.
- If the catheter is removed accidentally, just re-insert another 14 gauge needle next to the former one.
- Evacuate ASAP
- Make sure Flight catheter in his chest

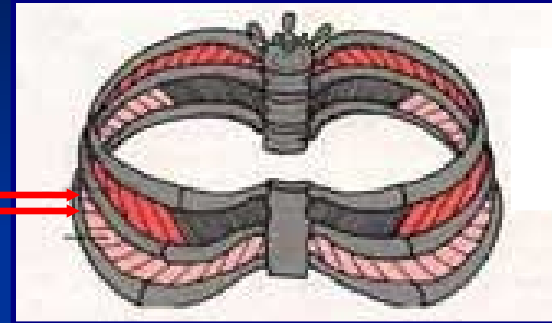


he has a

# Treating Open and Closed Chest Wounds (Cont'd)

- Questions:

- Why “up and over” and Never “down and under”



- What if casualty doesn't have a tension pneumothorax and you perform NCD?
  - May already have hole(s) in chest
  - Probably larger than diameter of 14 ga. needle
  - No additional damage

# Treating Open and Closed Chest Wounds (Cont'd)

- Questions:
  - Will lung re-inflate after pressure is released from chest cavity? Example: The Three Kings movie
  - No. To re-inflate the lung you must have a chest tube with suction and or positive pressure ventilation.
  - NCD merely releases the tension and built up pressure which will ultimately suffocate the casualty.

# Treating Open and Closed Chest Wounds (Cont'd)

- Complications:
  - Insertion of the needle over the top of the rib prevents laceration of the intercostal vessels or nerve which can cause hemorrhage or nerve damage.
  - “Up and over” NEVER “down and under”

# **Treating Open and Closed Chest Wounds (Cont'd)**

- Injuries to the chest are fewer in nature secondary to modern body armor, however it doesn't protect 100%.
- Wounds to the chest can be rapidly fatal if not identified early and treated appropriately.



# **Treating Open and Closed Chest Wounds (Cont'd)**

- **QUESTIONS?**
- **Demonstration of NDC on a mannequin**